

CLAIMS

What is claimed is:

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1. A method of evaluating a compound for utility in treating neurological disease comprising contacting a compound with a cell that coexpresses KCNQ2 and KCNQ3, wherein the KCNQ2 and the KCNQ3 form a potassium channel; and measuring the activity of the potassium channel.

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2. The method of Claim 1 wherein the cell is an oocyte.

15 3. The method of Claim 1 wherein the cell is a mammalian cell.

4. The method of Claim 1 wherein the cell is a mammalian cell selected from HEK 293E, CHO and COS cells.

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5. The method of Claim 1 wherein KCNQ2 is hKCNQ2.

6. The method of Claim 1 wherein KCNQ3 is hKCNQ3.

25 7. The method of Claim 1 wherein the compound is an agonist of the potassium current.

8. The method of Claim 1 wherein the compound is an antagonist of the potassium current.

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9. The method of Claim 1 wherein the activity of the potassium channel is measured by a current or a change in membrane voltage, wherein the change in membrane voltage is determined through a voltage sensitive dye.

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10. The method of claim 9 wherein the voltage sensitive dye is detectable by fluorescence.

11. The method of Claim 1 comprising contacting a compound with a mammalian cell that coexpresses KCNQ2 and KCNQ3, wherein the KCNQ2 and the KCNQ3 form a potassium channel; and measuring the activity of the potassium channel.
12. The method of Claim 11 wherein the compound is an agonist of the potassium current.
13. The method of Claim 11 wherein the compound is an antagonist of the potassium current.
14. The method of Claim 11 wherein the activity of the potassium channel is measured by a current.
15. The method of Claim 11 wherein the activity of the potassium channel is measured by a change in membrane voltage wherein the change in membrane voltage is determined through a voltage sensitive dye.
16. The method of claim 15 wherein the voltage sensitive dye is detectable by fluorescence.
17. The method of Claim 1 comprising contacting a compound with a mammalian cell that coexpresses hKCNQ2 and hKCNQ3, wherein the hKCNQ2 and the hKCNQ3 form a potassium channel; and measuring the activity of the potassium channel.
18. The method of Claim 17 wherein the compound is an agonist of the potassium current.
19. The method of Claim 17 wherein the compound is an antagonist of the potassium current.
20. The method of Claim 17 wherein the activity of the potassium channel is measured by a current or a change

in membrane voltage wherein the change in membrane voltage is determined through a voltage sensitive dye.

21. The method of claim 20 wherein the voltage sensitive dye is detectable by fluorescence.
22. A pharmaceutical composition comprising a pharmaceutically acceptable carrier and a therapeutically effective amount of a compound identified by the screening assay of Claim 1 or a pharmaceutically acceptable salt or prodrug form thereof, wherein said compound modulates a potassium channel formed by the coexpression of KCNQ2 and KCNQ3.
23. A method for treating a degenerative neurological disorder involving a potassium channel formed by the coexpression of KCNQ2 and KCNQ3 comprising administering to a host in need of such treatment a therapeutically effective amount of a compound identified by the screening assay of Claim 1 or a pharmaceutically acceptable salt or prodrug form thereof.
24. A method for treating epilepsy involving a potassium channel formed by the coexpression of KCNQ2 and KCNQ3 comprising administering to a host in need of such treatment a therapeutically effective amount of a compound identified by the screening assay of Claim 1 or a pharmaceutically acceptable salt or prodrug form thereof.